

NON-PUBLIC?: N
ACCESSION #: 8811280150
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Millstone Nuclear Power Station Unit 3 PAGE: 1 OF 3

DOCKET NUMBER: 05000423

TITLE: Manual Reactor Trip Due to Imminent Turbine Trip Due to Low
Condenser Vacuum
EVENT DATE: 10/22/88 LER #: 88-024-00 REPORT DATE: 11/21/88

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Barret W. Nichols, Engineer (ext. 5493) TELEPHONE: 203 447-1791

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE TO NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On October 22, 1988 at 0507 hours, with the plant in Mode 1 at 100% power, a manual reactor trip was initiated due to an anticipated turbine trip. Prior to the trip, the plant was experiencing fouling of the traveling screens due to large amounts of storm induced seaweed at the intake. Trips of two Circulating Water Pumps in the same bay, as a result of the fouled Intake screens, caused condenser vacuum to decrease. Due to problems at the Intake Structure and decaying condenser vacuum, the reactor was manually tripped in order to prevent unnecessary challenges to plant systems.

Root cause of this event was environmental conditions which caused debris loadings in excess of the traveling screen removal capacity. The environmental conditions were high winds, an incoming spring tide combined with extremely choppy waves.

Corrective action includes modifications to the traveling screen system's trash trough to increase debris removal capability through an alternate path. A review of the design capacity of the traveling screens, Screen Wash Pumps and

Strainers in respect to extreme weather conditions will be conducted.

END OF ABSTRACT

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I. Description of Event

On October 22, 1988 at 0507 hours, with the plant in Mode 1 at 100% power, a manual reactor trip was initiated due to an anticipated turbine trip on loss of condenser vacuum. Prior to the trip the plant was experiencing fouling of the traveling screens due to large amounts of storm induced seaweed at the Intake Structure. The subsequent Turbine and Generator trips were normal responses to the Reactor trip. All safety systems were fully operable at the time of the trip.

High winds and waves existed during the early morning of October 22, 1988. Between 0200 and 0300 hours a number of attempts were made to assess the extent of the storm. The wind direction was out of the northeast, almost offshore to the direction of the intake structure faces. There was an incoming spring tide, with high tide occurring at approximately 0600 hours. The Northeast Utilities Environmental Lab later reported that there were large quantities of seaweed in the water due to this storm being the first to occur since the end of the summer.

In accordance with system design, Screen Wash pumps and Screen Wash strainer sections were alternated during the course of the storm to allow the Screen Wash strainers to be cleaned. Although large quantities of seaweed were found when the strainers were cleaned, no operational abnormalities were identified with the Screen Wash pumps, Screen Wash strainers or traveling screens. Operations personnel were stationed at the Intake Structure during the storm to ensure that the equipment operated properly.

At 0445 control room operators observed high traveling screen differential pressure readings due to high debris loading. The Shift Supervisor (SS) went to the intake structure to assess the situation and noted that the trash conveyer was clogged. The trash conveyer had clogged between 0445 to 0500 hours. He directed on shift personnel to break a hole in the side of the trash trough to clear the debris. The SS then directed the SCO to begin a power reduction and to manually trip the reactor if a turbine trip was anticipated. The A and B condenser waterbox cross connect valves were opened in anticipation of a Circulating Water pump trip. At 0505 hours the A Circulating Water pump was manually tripped as the differential pressure across it's traveling screen rose above 35" water column. At

0506 hours the B Circulating Water pump automatically tripped on high traveling screen differential pressure. Trips of two Circulating Water pumps in the same bay caused condenser vacuum to decrease. The SS assessed that it was not possible to reinitiate Circulation Water pump flow prior to condenser vacuum decaying to the low condenser vacuum - Turbine Trip setpoint and ordered it Reactor Trip. Within 5 minutes of the reactor trip the remaining four Circulating Water pumps either automatically tripped or were manually tripped due to high traveling screen differential pressure.

At the time of the trip operators verified that the Reactor Trip and Bypass Breakers were open, that all control rods were fully inserted and that neutron flux was decreasing. Feedwater Isolation was received due to low Average Reactor Coolant System temperature following the trip. An Auxiliary Feedwater actuation occurred as a result of a steam generator low low level signal. These are normal plant responses. No additional Engineered Safety Features were required or initiated. The plant was stable in Mode 3 (Hot Standby) at 0517 as indicated by Average Reactor Coolant system Temperature returning to a stable value.

II. Cause of Event

Root cause of this event was environmental conditions which caused debris loadings in excess of the Traveling Screen removal capacity, The environmental conditions were high winds, an incoming spring tide combined with extremely choppy waves.

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III. Analysis of Event

This event is reported in accordance with 10CFR50.73(a)(2)(iv), any event or condition that results in manual or automatic actuation of an Engineered Safety Feature. Immediate notifications were performed in accordance with 10CFR50.72(b)(2)(ii).

The event had no safety significance due to the fact that the trip was manually initiated when a Turbine trip was imminent. While seaweed loadings were high, all equipment functioned as designed. All plant protection systems performed as designed in response to this occurrence and the event posed no danger to the health and safety of the public.

The Service Water Pumps, along with their self-cleaning strainers, functioned as designed. The Service Water system was not adversely impacted by the storm.

A unit downpower, using the Rod Control and Steam Dump systems, was considered as potential corrective action during extreme weather conditions. The intent would be to reduce unit output below 50% power, where a turbine trip would not result in a reactor trip. Due to an interlock which prevents Steam Dump operation on loss of condenser vacuum, a power reduction below the Turbine Trip - Reactor Trip setpoint is not possible.

IV. Corrective Action

The immediate corrective action was to clear the traveling screens, trash trough and conveyer of debris. The Screen Wash Trough was modified to permit an alternate debris removal path.

The present design of the trough has a segment which can be removed if the conveyer fails. The segment cannot be safely and expeditiously removed if loaded with debris from the conveyer. Modifications will be made to include a drop door over the emergency trash pit to prevent trough blockage.

The use of manpower to assist the operating shift was reviewed. Although additional manpower would probably not have been enough to prevent the overload of the Traveling Screens, procedural guidelines for calling in manpower during foul weather was strengthened.

Additional corrective action/action to prevent recurrence includes reviewing the design capacity of the traveling screens, Screen Wash pumps and strainers with respect to extreme weather conditions.

V. Additional Information

Licensee Event Report numbers 86-035 and 88-014 are similar in that Reactor Trip due to Turbine Trip resulted when fouling of the Intake Screens caused Circulating Water Pumps to trip causing condenser vacuum to decrease.

EIIS CODES

Systems Components

Circulating Water System - KE Pumps -P

Rod Control System - AA Traveling Water Screens - SCN

Service Water System - BI Condenser - COND

Steam Dump System - R Strainers - STR

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Berlin Connecticut

The Connecticut Light And Power Company
Western Massachusetts Electric Company
Holyoke Water Power Company P.O. BOX 270
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Re: 10CFR50.73(a)(2)(iv)
November 21, 1988
MP-12463

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Reference: Facility Operating License No. NPF-49
Docket No. 50-423
Licensee Event Report 88-024-00

Gentlemen:

This letter forwards Licensee Event Report 88-024-00 required to be submitted within thirty (30) days pursuant to 10CFR50.73(a)(2)(iv), any event resulting in a manual actuation of the Reactor Protection System.

Very truly yours,
NORTHEAST NUCLEAR ENERGY COMPANY

Stephen E. Scace
Station Superintendent
Millstone Nuclear Power Station

SES/BWN:tjp

Attachment: LER 88-024-00

cc: W. T. Russell, Region I Administrator
D. H. Jaffe, NRC Project Manager, Millstone Unit Nos. 2 and 3
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1, 2 and 3

END OF DOCUMENT

ACCESSION #: 8811280157
